$$\widehat{\pi}_t = \beta \mathbb{E}_t \widehat{\pi_{t+1}} + \frac{(1-\beta\psi)(1-\psi)}{\psi}\left(\widehat{\mu}_t + \widehat{\phi}_t\right)$$

$$\widehat{c}_t = E_t\widehat{c_{t+1}} - \widehat{R}_t + E_t\widehat{\pi_{t+1}}$$

$$\widehat{Y}_t = \frac{c}{Y}\widehat{c}_t + \frac{g}{Y}\widehat{g}_t + \frac{\gamma v}{Y}\widehat{v}_t$$

$$\widehat{n_t^p} = (1-\xi^p)\,\widehat{n_{t-1}^p} - (1-s)z^p g\left(z^p\right)\widehat{z_t^p} + \frac{(1-G\left(z^*\right))\,q(\theta)v}{n^p}\left(\widehat{v}_t - \sigma\widehat{\theta}_t\right) - \frac{z^* g\left(z^*\right)q(\theta)v}{n^p}\widehat{z_t^*}$$

$$\widehat{n_t^f} = \left(1-\xi^f\right)\widehat{n_{t-1}^f} + \frac{\left(G\left(z^*\right) - G\left(z^f\right)\right)q(\theta)v}{n^f}\left(\widehat{v}_t - \sigma\widehat{\theta}_t\right) + \frac{q(\theta)v}{n^f}\left(z^* g\left(z^*\right)\widehat{z_t^*} - z^f g\left(z^f\right)\widehat{z_t^f}\right)$$

$$(1-\rho)z^*\widehat{z_t^*} = z^p\widehat{z_t^p} - \rho z^f\widehat{z_t^f}$$

$$\rho\phi\left(z^f + \beta\left(1-\xi^f\right)\left(\mathbb{E}z - z^f\right)\rho_A\right)\widehat{A_t} + \rho\phi z^f\left(\widehat{\phi}_t + \widehat{z_t^f}\right) + \rho\beta\phi\left(1-\xi^f\right)\left(\mathbb{E}z - z^f\right)\mathbb{E}_t\widehat{\phi_{t+1}}$$

$$+\left(b - \rho\phi z^f\right)\left(\widehat{c}_t - \mathbb{E}_t c_{t+1}\right) - \rho\phi\beta\left(1-\xi^f\right)z^f\mathbb{E}_t\widehat{z_{t+1}^f} - \beta\left(1-\xi^f\right)\frac{\eta\gamma\theta}{1-\eta}\mathbb{E}_t\widehat{\theta_{t+1}} = 0$$

$$\phi\left(z^p + (1-\beta(1-s)\rho_A)\,F + \beta(1-s)\rho_A\int_{z^p}^{+\infty}\left[1-G(x)\right]dx\right)\widehat{A_t} + \phi z^p\widehat{z_t^p} + \phi\left(z^p + F\right)\widehat{\phi}_t$$

$$+\left(b - \phi\left(z^p + F\right)\right)\left(\widehat{c}_t - \mathbb{E}_t c_{t+1}\right) + \beta(1-s)\phi\left(\int_{z^p}^{+\infty}\left[1-G(x)\right]dx - F\right)\mathbb{E}_t\widehat{\phi_{t+1}}$$

$$-\beta\left(1-\xi^p\right)\frac{\eta\gamma\theta}{1-\eta}\mathbb{E}_t\widehat{\theta_{t+1}} - \beta(1-s)\left(\left(1-G\left(z^p\right)\right)\phi - \frac{\eta\gamma\theta}{1-\eta}g\left(z^p\right)\right)z^p\mathbb{E}_t\widehat{z_{t+1}^p} = 0$$

$$\frac{\gamma}{(1-\eta)\phi q(\theta)}\left(-\widehat{A_t} - \widehat{\phi}_t + \sigma\widehat{\theta}_t\right) + (1-\rho)\left(1-G\left(z^*\right)\right)z^*\widehat{z_t^*} + \rho\left(1-G\left(z^f\right)\right)z^f\widehat{z_t^f} = 0$$

$$\widehat{v}_t = \widehat{\theta}_t - \frac{\left(1-\xi^p\right)\theta n^p}{v}\widehat{n_{t-1}^p} - \frac{\left(1-\xi^f\right)\theta n^f}{v}\widehat{n_{t-1}^f} + \frac{(1-s)\theta g\left(z^p\right)z^p n^p}{v}\widehat{z_t^p}$$

$$\widehat{Y}_t = \widehat{A_t} + \frac{(1-s)\left(\int_{z^p}^{+\infty} z g(z)dz\right)n^p}{Y}\widehat{n_{t-1}^p} + \frac{\rho\left(1-\xi^f\right)\mathbb{E}_z n^f}{Y}\widehat{n_{t-1}^f} - \frac{(1-s)n^p\left(z^p\right)^2 g\left(z^p\right)}{Y}\widehat{z_t^p}$$

$$-(1-\rho)\left(z^*\right)^2 g\left(z^*\right)\frac{vq(\theta)}{Y}\widehat{z_t^*} - \rho\left(z^f\right)^2 g\left(z^f\right)\frac{vq(\theta)}{Y}\widehat{z_t^f}$$

$$+\left(\int_{z^*}^{+\infty} z g(z)dz + \rho\int_{z^f}^{z^*} z g(z)dz\right)\frac{vq(\theta)}{Y}\left(\widehat{v}_t - \sigma\widehat{\theta}_t\right)$$

$$\widehat{R_t} = \rho_R\widehat{R_{t-1}} + (1-\rho_R)\left[\rho_\pi\mathbb{E}_t\widehat{\pi_{t+1}} + \rho_y\widehat{Y}_t\right] + \epsilon_t^m$$